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Effect of local hypothermia on H- and M-responses after spinal cord contusion in dogs

Iafarova G., Tumakaev R., Hazieva A., Baltina T.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2014, Pleiades Publishing, Inc. In this study we investigated a motor-neuronal functional state based on H- and M-responses from m. quadratus plantae in dogs before and after experimental spinal cord contusion with and without following local intraoperative hypothermia. H- and M-responses from m. quadratus plantae were recorded during stimulation of the tibial nerve and results were compared between the groups. Our results demonstrate that local hypothermia applied after spinal cord contusion reduces amplitude of both M- and H-responses and also Hmax/Mmax ratio that may indicate depression of motorneurons excitability. After spinal cord contusion with-out following hypothermia the excitability of the spinal motorneurons during post-traumatic period, in opposite, was significantly increased. These results support a conclusion that intraoperative hypothermia after spinal cord contusion can delay development of functional excitability of the motoneurons and protect from further changes in H- and M-responses.

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Keywords

experimental spinal cord contusion, H-reflex, hypothermia, M-response, neuromyography, reflex excitability